

## Lab # Periodic Table Lab

### BACKGROUND

By 1818, people knew of 43 elements. By 1860, there were so many known elements that chemists began to organize the elements in tables to keep track of them.

In 1869, Dmitri Mendeleev published a Periodic Table, with the elements arranged in order of increasing atomic mass. He found that there was a relationship between the chemical properties of elements and their atomic mass. It was then discovered that the relationships were even stronger when you arranged the elements by increasing atomic number.

The modern Periodic Table currently contains 114 elements, with more being found at this time. Scientists are "building" new elements by taking small atoms and smashing them together to make atoms with more protons in them (new elements). These are then added to the Periodic Table, arranged in order of increasing atomic number. Each horizontal row is called a period (or a series). Each column is called a group (or a family).

### PURPOSE

The purpose of this laboratory is to examine the relationships among the elements as they are organized in the Periodic Table.

Your data will be your graphs that you make. Your conclusions will be based on the observations you make from the graphs.

**DO NOT** forget to include the graphs with your lab report!!!!

## GRAPHING INSTRUCTIONS

- Before you begin graphing, make a data table for each graph. Include the element and the variable that you are asked to measure.

Example: for atomic mass, your data table will include the element and the atomic mass for that element.

- No free-hand graphs. Use a ruler for the axes and lines.
- Your graphs should be clean and clear with BOTH axes labeled.
- Each graph should have a title at the top.
- The symbols for the elements always go along the bottom (x-axis).
- Your y-axis will vary depending on what you are asked to measure.
- For each point, place a LARGE dot and then connect them with a ruled line.

## PROCEDURE

Make the following graphs:

### I. Atomic Mass for a Period

Graph the atomic mass for the elements in Period 3. Period 3 begins with sodium.

### II. Atomic Number for a Period

Graph the atomic number for the element in Period 2

### III. Atomic Number for a Family

Graph the atomic number for the elements in Group 2. These are the alkaline earth metals. The group begins with Beryllium.

### IV. Atomic Size for a Period

Graph the atomic radius for the first seven elements in Period 2, which begins with

**Lithium. Use the atomic radius value found in Reference Table S.**

**V. Atomic Size within a Family**

**Graph the atomic radius of the first four elements in Group 1, the alkali metals, beginning with Lithium. Use the atomic radius value found in Reference Table S.**

**VI. Ionization Energy within a Family**

**Graph the Ionization energy of the elements in Group 17, beginning with Fluorine and ending with Iodine. Use the Ionization energy value in Reference Table S.**

**VII. Ionization Energy for a Period**

**Graph the Ionization energy of the elements in Period 3, beginning with sodium.**

**VIII. Electronegativity within a Family**

**Graph the Electronegativity of the elements in Group 13, beginning with Boron. Use the electronegativity values found in Reference Table S.**

**IX. Electronegativity for a Period**

**Graph the Electronegativity of the elements in Period 4, beginning with potassium and ending with Bromine. Use the electronegativity values found in Reference Table S.**

